Molecular Detection of Metallo-β-Lactamase Genes in Pseudomonas aeruginosa Strains Isolated from Hospitalized Patients in Arak

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Background & Objectives: In 1966 Metallo-β-lactamase (MBL) was discoverd in *Bacillus cereus* for first time (1). MBL genes are located on chromosome and plasmids. These plasmids are placed on transposons or integrons. Aquired MBLs exist Enterobacteriace, *Pseudomonas aeruginosa and Acintobacter baumanii*. MBL genes can be transmitted horizontally, these genes cause carbapenem resistance in Enterobacteriace and other gram negative bacteria. Presence of VIM (Veronese Imipenemase), IMP (Imipenemase), SPM (Sao Paulo Metallo-β-lactamase), GIM (Germany Imipenemase) in *P. aeruginosa* cause resistance to imipenem, meropenem, anti-pseudomonal cephalosporins and anti-pseudomonal penicillins. The aim of this study was to determine the prevalence of MBL genes in P. aeruginosa strains isolated from hospitalized patients in Arak.

Methods: 40 imipenem-resistant *P. aeruginosa* strains were collected from samples of different hospitalized patients in Arak hospitals. Molecular studies was done by Duplex-PCR to detect two MBL genes including blaVIM-1and blaIMP-1 in 40 imipenem-resistant *P. aeruginosa* strains.

Results: blaVIM-1 and blaIMP-1 were detected in imipenem-resistant *P. aeruginosa* strains respectively 50 percent and 6.6 percent.

Conclusion: According to this study frequency of blaVIM-1 in Arak is almost like what previous studies in other cities showed. But this seems to be first report of detection of blaIMP-1 in P. aeruginosa in Iran. Therefore it is necessary to control MBL-producing strains especially in hospitals.

Keywords: Gene; *Pseudomonas aeruginosa*; Metallo Beta Lactamase; Molecular Detection